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10/805,875	03/22/2004	Alexander I. Yatskov	324758025US	9876

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PERKINS COIE LLP
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247

EXAMINER	
PAPE, ZACHARY	

ART UNIT	PAPER NUMBER
2835	

DATE MAILED: 06/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

A

Office Action Summary	Application No.	Applicant(s)	
	10/805,875	YATSKOV ET AL.	
	Examiner	Art Unit	
	Zachary M. Pape	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-71* is/are pending in the application.

4a) Of the above claim(s) *35* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30,32-34 and 36-71* is/are rejected.

7)☒ Claim(s) *31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of species I in the reply filed on 3/28/2006 is acknowledged.

Claim Objections

2. Claim 70 is objected to.

Claim 70 is objected to because it is unclear to the Examiner how the means for removing heat from the portion of air includes means for boiling a working fluid moving through a passage. The Examiner asserts that there are only two processes that can cause a fluid to boil, change the surrounding pressure, or increasing the temperature of the liquid. The Examiner respectfully asserts that neither the working fluid, nor the heat exchanger can provide the adequate means for boiling a working fluid. For the purposes of examination, the Examiner has considered the means for boiling a working fluid to be the piping in the heat exchanger.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-13, 16-19, 21-23, 25-26, 28-30, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Khrustalev et al. (US 2003/0010477).

With respect to claim 1, Khrustalev et al. teaches a computer system comprising: a chassis (10), a first computer module compartment (Between elements 30, See Fig 3. See also paragraph 35) positioned in the chassis and in an air flow path (See Paragraph 42, where the airflow path to cool 36 could be upward), a second computer module compartment (Between elements 30) positioned in the chassis and in the air flow path (See fig 1); and a heat exchanger (30) positioned in the chassis and in the air flow path (See fig 1).

With respect to claim 26, Khrustalev et al. further teaches a computer system comprising: a chassis (10), a first computer module compartment (Between respective heat exchangers (30) positioned in the chassis and in an air flow path (See Fig 1); a first heat exchanger (30) positioned in the chassis and in the air flow path (See Fig 1), wherein the first heat exchanger includes at least one internal fluid passage configured to carry a working fluid that absorbs heat from air flowing in the air flow path (See paragraph 39), and a second heat exchanger (30) in fluid communication with the first heat exchanger (See Fig 1, see also paragraph 37), wherein the second heat exchanger is configured to cool the working fluid carried by the first heat exchanger (Upward airflow from either convection or forced air will cause transfer heat to the working fluid in the second, higher heat exchanger).

With respect to claim 2, Khrustalev et al. further teaches that the heat exchanger (30) is positioned at least partially downstream of the first computer module

compartment and at least partially upstream of the second computer module compartment (See Fig 1).

With respect to claim 3, Khrustalev et al. further teaches that the heat exchanger (30) includes at least one internal fluid passage configured to carry a working fluid (See Paragraph 39).

With respect to claims 4 and 16, Khrustalev et al. further teaches that the heat exchanger (30) includes at least one internal fluid passage configured to carry a working fluid having a boiling point in the heat exchanger between about 45F and about 75F (See Paragraph 39. Additionally the Examiner notes that the language "configured to" or "adapted to" is not a positive limitation but only requires the ability to so perform, and therefore is given little patentable weight. In re Hutchison, 69 USPQ 138.)

With respect to claim 5, Khrustalev et al. further teaches that the heat exchanger (30) includes at least one opening through which air can pass from at least proximate the first computer module compartment to at least proximate the second computer module compartment (See Fig 2).

With respect to claims 6 and 29, Khrustalev et al. further teaches that the heat exchanger (30) is positioned at least partially between the first and second computer module compartments in the chassis (See Figs 1 and 3, see also paragraph 35).

With respect to claims 7, 8, and 9, Khrustalev et al. further teaches that the heat exchanger (30) is a first heat exchanger, and wherein the computer system further comprises: a third computer module compartment (Between two of the heat exchangers (30) see Fig 1) positioned in the chassis and in the air flow path (See Fig 1); and a

second heat exchanger (30, see paragraph 36) positioned in the chassis and in the air flow path (See Fig 1), wherein the second heat exchanger is positioned at least partially downstream of the second computer module compartment and at least partially upstream of the third computer module compartment (See Fig 1), wherein the first, second and third computer module compartments, and the first and second heat exchangers, are arranged vertically in the chassis (See Fig 1).

With respect to claims 10, 11, and 17, Khrustalev et al. further teaches that the first computer module compartment (Between respective heat exchangers (30)) is configured to hold at least a first computer module (or a plurality thereof) oriented edgewise with respect to the air flow path (See Fig 1).

With respect to claim 12, Khrustalev et al. further teaches that the first computer module compartment is configured to hold at least a first computer module oriented edgewise with respect to the air flow path toward a first side of the heat exchanger (See Fig 1), and wherein the second computer module compartment is configured to hold at least a second computer module oriented edgewise with respect to the air flow path toward a second side of the heat exchanger opposite to the first side of the heat exchanger (See Fig 1).

With respect to claim 13, Khrustalev et al. further teaches a first computer module (9) carried by the first computer module compartment (See Fig 3), wherein the first computer module includes at least a first computer processor (7, see paragraph 2, "IC"), and a second computer module (9) carried by the second computer module

compartment, wherein the second computer module includes at least a second computer processor (7, see paragraph 36).

With respect to claim 18, Khrustalev et al. further teaches that the first computer module compartment is position at least proximate to a first side of the heat exchanger (See Fig 1), and wherein the chassis further includes a second computer module compartment (Between a second set of 30) positioned in the air flow path in the chassis at least proximate to a second side of the heat exchanger opposite to the first side of the heat exchanger (See Fig 1).

With respect to claim 19, Khrustalev et al. further teaches that the heat exchanger (30) is a first heat exchanger, and wherein the computer system further comprises: a third computer module compartment positioned in the air flow path (See Fig 1) in the chassis (10), and a second heat exchanger (30) positioned at least partially between the second and third computer module compartments (See Fig 1) in the air flow path in the chassis, the second heat exchanger including at least one internal fluid passage configured to carry a working fluid having a boiling point in the second heat exchanger between about 45F and about 75F (See paragraph 39).

With respect to claims 21 and 22, Khrustalev et al. further teaches that the working fluid is carried by the internal fluid passage of the heat exchanger (See Paragraph 39) and wherein a first portion of the working fluid is in a liquid state and a second portion of the working fluid is in a gaseous state in the heat exchanger (The working fluid will be both in a liquid and gaseous state in the heat exchanger since the heat from the board (9) is causing the fluid to change phases).

With respect to claim 23, Khrustalev et al. further teaches that the working fluid is a refrigerant (Paragraph 39, "Freon").

With respect to claim 25, Khrustalev et al. further teaches that the heat exchanger (30) is positioned upstream of the first computer module compartment in the chassis (See Fig 1).

With respect to claim 28, Khrustalev et al. further teaches a plurality of computer modules (7) held in the first computer module compartment (See Fig 3).

With respect to claim 30, Khrustalev et al. further teaches that the second heat exchanger (30) is spaced apart from the chassis (See Fig 1).

With respect to claim 32, Khrustalev et al. further teaches that the first computer module compartment is configured to hold a plurality of computer modules (7) oriented edgewise with respect to the air flow path (See Fig 3).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 14, 15, 20, 33-34, 36-49, 51, 53,54-57, 59-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khrustalev et al. in view of Benavides (US 6,185,098).

With respect to claims 14, 15, 20, Khrustalev et al. teaches the limitations of claim 1 above, and further teaches airflow, but is silent as to utilizing an air mover carried by the chassis and configured to move air past the heat exchanger along the air flow path in the chassis. Benavides teaches an air mover (203/208) carried by a chassis (101) and configured to move air past the heat exchanger along an air flow path in a chassis. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Benavides with that of Khrustalev et al. to provide additional ventilation (Benavides: Column 12, Lines 59-61).

With respect to claim 33, Khrustalev et al. further teaches a computer system comprising, a chassis (10), a flow path through at least a portion of the chassis, a first computer module compartment (Between respective heat exchangers (30)) positioned in an air flow path in the chassis, a first plurality of computer modules (7) held in the first computer module compartment; a second computer module compartment (Between respective heat exchangers 30) positioned in an air flow path in the chassis and spaced apart from the first computer module compartment (See Fig 1, see also Paragraphs 35-37), a second plurality of computer modules (7) held in the second computer module compartment at least partially in the air flow path; and a heat exchanger (30) positioned in the air flow path in the chassis (See Fig 1), wherein the heat exchanger is positioned at least partially downstream of the first computer module compartment and at least partially upstream of the second computer module compartment (See Fig 1), and wherein the heat exchanger includes at least one opening through which the air mover moves air (See Fig 2 adjacent the arrows of the element number 31). Khrustalev et al.

is silent as to an air mover positioned in flow communication with the chassis, wherein the air mover is configured to move air along a flow path. Benavides teaches an air mover (203/208) configured to move air past the heat exchanger along an air flow path in a chassis. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Benavides with that of Khrustalev et al. to provide additional ventilation (Benavides: Column 12, Lines 59-61).

With respect to claim 34, Benavides further teaches that the air mover (203/208) is positioned toward an upper portion of the chassis and configured to draw air upward through the chassis such that air would draw past the first computer module compartment, the heat exchanger, and the second computer module compartment of Khrustalev et al.

With respect to claim 36, Benavides further teaches that the air mover is carried by the chassis (See Fig 2).

With respect to claim 37, Khrustalev et al. further teaches that the heat exchanger is a first heat exchanger, and wherein the computer system further comprises: a third computer module compartment (See Fig 1, see also Paragraph 36) positioned in the air flow path in the chassis and spaced apart from the second computer module compartment; a third plurality of computer modules (7) held in the third computer module compartment (See Paragraph 36) at least partially in the air flow path; and a second heat exchanger (30) positioned in the air flow path in the chassis, wherein the second heat exchanger is positioned at least partially downstream of the second computer module compartment and at least partially upstream of the third

computer module compartment (See Fig 1), and wherein the heat exchanger includes at least one opening through which the air mover moves air (See Fig 2).

With respect to claim 38, Khrustalev et al. further teaches that the first computer module compartment, the second computer module compartment, and the heat exchanger are arranged vertically with respect to the chassis (See Figs 1 and 2).

With respect to claim 39, Khrustalev et al. further teaches that the first computer module compartment is configured to hold at least a first computer module oriented edgewise with respect to the air flow path toward a first side of the heat exchanger (See Fig 1), and wherein the second computer module compartment is configured to hold at least a second computer module oriented edgewise with respect to the air flow path toward a second side of the heat exchanger opposite to the first side of the heat exchanger (See Fig 1).

With respect to claim 40, Khrustalev et al. further teaches that the first plurality of computer modules (7) is individually carried by the first computer module compartment (As illustrated in Fig 3 for example), wherein each of the first plurality of computer modules includes at least a first computer processor (See Paragraph 2, "IC"), wherein each of the second plurality of computer modules (7) is individually carried by the second computer module compartment (Again as illustrated in Fig 3 for example), and wherein each of the second plurality of computer modules includes at least a second computer processor (See paragraph 2, "IC").

With respect to claim 41, Khrustalev et al. further teaches that the heat exchanger (30) includes at least one internal fluid passage configured to carry a working fluid (See Paragraph 39).

With respect to claim 42, Khrustalev et al. further teaches that the heat exchanger (30) includes at least one internal fluid passage configured to carry a working fluid having a boiling point in the heat exchanger between about 45F and about 75F (See Paragraph 39. Additionally the Examiner notes that the language "configured to" or "adapted to" is not a positive limitation but only requires the ability to so perform, and therefore is given little patentable weight. In re Hutchison, 69 USPQ 138.)

With respect to claim 43, Khrustalev et al. further teaches that each computer module (7) of the first and second pluralities of computer modules includes at least one processor (See paragraph 2, "IC").

With respect to method claims 44-49, 51, 54 the method steps recited in the claims are inherently necessitated by the device structure as taught by the Khrustalev et al. and Benavides references.

With respect to method claim 53, Khrustalev et al. in view of Benavides teaches the limitations of claim 51 above but is silent as to the working fluid has a boiling point between about 50F and about 65F, however it would have been obvious to one of ordinary skill in the art at the time the invention was made to setup the system such that the refrigerant has a boiling point in the heat exchanger between about 50F and 65F since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA

1980). In the present case having a boiling point between 50F and 65F will provide a suitable degree of cooling to the components therewith.

With respect to method claim 55, Khrustalev et al. in view of Benavides teaches the limitations of claim 51 above and further teaches that the working fluid is a first working fluid, and the heat exchanger (30) is a first heat exchanger having a first internal passage (30, 31, 44), and wherein the method further comprises: after moving the portion of air past the first heat exchanger (30), moving the portion of air past a second computer module (7) in the chassis to transfer heat from the second computer module (7) to the portion of air; moving a second working fluid (See Paragraph 39) through a second internal passage (30, 31, 44) of a second heat exchanger (30) positioned at least proximate to the second computer module (7) in the chassis (See paragraph 37), and moving the portion of air past the second heat exchanger (30) to transfer heat from the portion of air to the second heat exchanger (30) and boil at least a portion of the second working fluid in the second internal passage (See paragraphs 39-40).

With respect to claim 56, Khrustalev et al. in view of Benavides teaches the limitations of claim 55 above and further teaches moving the first working fluid through the first internal passage (30, 31, 44) includes moving a first portion of a refrigerant received from a refrigerant source (36), and wherein moving a second working fluid through a second internal passage (30, 31, 44) includes moving a second portion of the refrigerant. Khrustalev et al. in view of Benavides is silent as to the second working fluid being received from the refrigerant source, however It would have been obvious to

one of ordinary skill in the art at the time the invention was made to modify the system of Khrustalev et al. such that all of the sets of passages have a common refrigerant source since doing so would allow flexibility in the system such that if the system as a whole requires more working fluid (refrigerant, I.E. because more of the heat exchangers are being used) the system could draw from common refrigerant source.

With respect to claim 57, Khrustalev et al. teaches a method for dissipating heat generated by a computer module (7) in a chassis (10), the method comprising: moving a working fluid (See Paragraph 39) through an internal passage (30, 31, 44) of a heat exchanger (30) positioned in the chassis (10), moving a portion of air past the heat exchanger (30) to transfer heat from the potion of air to the working fluid, and controlling the working fluid (Via piping 30, 31, 44, and wick 64) to maintain the working fluid at least proximate to the phase transition state while flowing through the internal passage (See paragraphs 39-40). Khrustalev et al. is silent as to moving a portion of air past the computer module in the chassis to transfer heat from the computer module to the portion of air. Benavides teaches moving a portion of air past a computer module in a chassis to transfer heat from the computer module to the portion of air (Via 207, 208, see Fig 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Benavides with that of Khrustalev et al. to provide additional ventilation (Benavides: Column 12, Lines 59-61).

With respect to claim 59, Khrustalev et al. in view of Benavides teaches the limitations of claim 57 but is silent as to the working fluid, wherein the working fluid is a refrigerant having a boiling point in the heat exchanger between about 50F and about

65F, however it would have been obvious to one of ordinary skill in the art at the time the invention was made to setup the system such that the refrigerant has a boiling point in the heat exchanger between about 50F and 65F since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present case having a boiling point between 50F and 65F will provide a suitable degree of cooling to the components therewith.

With respect to claim 60, Khrustalev et al. further teaches that the computer module (7) is a first computer module, and wherein the method further comprises, after moving the portion of air past the heat exchanger (30), moving the portion of air past a second computer module (7) in the chassis (10) to transfer heat from the second computer module (7) to the portion of air (That is, as air blows upward in the chassis of Khrustalev, it will pickup heat from the first lower module (7) and blow past the second higher heat exchanger (30) which supports a second computer module (7) and will further blow air past the second module).

With respect to claim 61, Khrustalev et al. further teaches that controlling the working fluid to maintain the working fluid at least proximate to the phase transition state includes controlling the pressure of the working fluid (The sizing of the pipes controls the pressure of the working fluid within).

With respect to claim 62, Khrustalev et al. further teaches a system for cooling first and second computer modules (7) positioned in a chassis (10, See Fig 3), the system comprising: means (openings in 30) for moving the portion of air past a heat

exchanger (30) in the chassis (10) after moving the portion of air past the first computer module (7), and means (See present office action Fig 1 below) for moving the portion of air past the second computer (7) module in the chassis after moving the portion of air past the heat exchanger (30). Khrustalev et al. is silent as to a means for moving a portion of air past the first computer module in the chassis to transfer heat from the first computer module to the portion of air. Benavides teaches a means (203/208) for moving a portion of air past a first computer module in a chassis to transfer heat from the first computer module to the portion of air. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Benavides with that of Khrustalev et al. to provide additional ventilation (Benavides: Column 12, Lines 59-61).

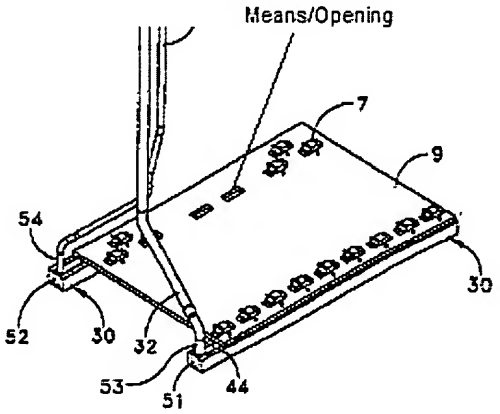

Fig 1

With respect to claim 63, Khrustalev et al. further teaches that the heat exchanger (30) is a first heat exchanger, and further comprising: means (opening in 30) for moving the portion of air past a second heat exchanger (30) in the chassis after

moving the portion of air past the second computer module (7); and means (See POA fig 1 above) for moving the portion of air past a third computer module (7) in the chassis after moving the portion of air past the second heat exchanger (30 Since the system is redundant as described in paragraph 37, the air will flow past the second heat exchanger (30) which has openings and then past a second module (7) similar to the first module which also has openings).

With respect to claim 64, Khrustalev et al. further teaches that the means (opening in 30) for moving the portion of air past a heat exchanger includes means for moving the portion of air through an opening in the heat exchanger.

With respect to claim 65, Khrustalev et al. further teaches means (64) for moving a working fluid through an internal passage in the heat exchanger (See Paragraph 39).

With respect to claim 66, Khrustalev et al. further teaches means (30, 31, 44, etc.) for moving a working fluid (See paragraph 39) having a boiling point between about 45F and about 75F through an internal passage in the heat exchanger.

With respect to claim 67, Khrustalev et al. further teaches a computer system comprising: means (30) for positioning at least a first computer module (7) in a first position along an air flow path; means (30) for positioning at least a second computer module (7) in a second position along the air flow path; and means (30, 31, 44, 64, and working fluid) for removing heat from the portion of air, wherein the means for removing heat are positioned at least partially between the first computer module (7) and the second computer module along the air flow path (See paragraph 37 and Figs 1-3). Khrustalev et al. is silent as to a means for moving a portion of air along the air flow

path. Benavides teaches a means (203/208) for moving a portion of air along an air flow path. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Benavides with that of Khrustalev et al. to provide additional ventilation (Benavides: Column 12, Lines 59-61).

With respect to claim 68, Khrustalev et al. further teaches that the means (30) for positioning at least a first computer module (7) includes means for positioning a first plurality of computer modules (7) at least proximate to the air flow path (See Fig 3), and wherein the means (30) for positioning at least a second computer module includes means for positioning a second plurality of computer modules (7) at least proximate to the air flow path (See Paragraph 37, and Figs 1-3).

With respect to claim 69, Khrustalev et al. further teaches that the means (30, 31, 44, 64, and working fluid) for removing heat from the portion of air includes means (64) for moving a working fluid through a passage (30, 31, 44) positioned at least proximate to the air flow path (See Figs 1-3).

With respect to claim 70, as best can be understood by the examiner, Khrustalev et al. further teaches that the means (30, 31, 44, 64, and working fluid) for removing heat from the portion of air includes means (30, 31, 44) for boiling a working fluid moving through a passage positioned at least proximate to the air flow path.

With respect to claim 71, Khrustalev et al. further teaches that the means (30, 31, 44, 64, and working fluid) for removing heat from the portion of air includes means (64) for moving a working fluid through a passage positioned at least proximate to the air flow path, wherein a first portion of the working fluid is in a liquid state and a second

portion of the working fluid is in a gaseous state (The working fluid will be both in a liquid and gaseous state in the heat exchanger since the heat from the board (9) is causing the fluid to change phases).

5. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Khrustalev et al.

With respect to claim 24, Khrustalev et al. teaches the limitations of claim 16 but is silent as to the working fluid, wherein the working fluid is a refrigerant having a boiling point in the heat exchanger between about 50F and about 65F, however it would have been obvious to one of ordinary skill in the art at the time the invention was made to setup the system such that the refrigerant has a boiling point in the heat exchanger between about 50F and 65F since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present case having a boiling point between 50F and 65F will provide a suitable degree of cooling to the components therewith.

6. Claims 27 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khrustalev et al. in view of Salt (US 5,603,375).

With respect to claim 27, Khrustalev et al. teaches the limitations of claim 26 above but is silent as to the working fluid has a boiling point in the first heat exchanger between about 45F and about 75F. Salt teaches utilizing a working fluid which has a boiling point in a heat exchanger of between about 45F and 75F (Column 2, Lines 1-5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Salt with that of Khrustalev et al. to provide adequate heat transfer capabilities.

With respect to claim 58, Khrustalev et al. in view of Benavides teaches the limitations of claim 57 above but is silent as to the working fluid has a boiling point in the first heat exchanger between about 45F and about 75F. Salt teaches utilizing a working fluid which has a boiling point in a heat exchanger of between about 45F and 75F (Column 2, Lines 1-5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Salt with that of Khrustalev et al. and Benavides to provide adequate heat transfer capabilities.

7. Claims 50, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khrustalev et al. in view of Benavides and further in view of Salt.

With respect to method claims 50, 52 Khrustalev et al. in view of Benavides teach the method of claim 44 above, and further teaches moving the portion of air past the heat exchanger includes transferring heat to the working fluid but fails to teach the working fluid having a boiling point between about 45F and about 75F. Salt teaches utilizing a working fluid which has a boiling point in a heat exchanger of between about 45F and 75F (Column 2, Lines 1-5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Salt with that of Khrustalev et al. to provide adequate heat transfer capabilities.

Allowable Subject Matter

8. Claim 31 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

With respect to claim 31, the allowability resides in the overall structure of the device as recited in dependent claim 31 and at least in part because claim 31 recites, "a controller operably coupled to the second heat exchanger to maintain the working fluid in phase transition within the first heat exchanger".

The aforementioned limitations in combination with all remaining limitations of claims 26 and 31 are believed to render said claim 31 patentable over the art of record.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 2006/0102322 teaches multiple heat exchangers in a chassis.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary M. Pape whose telephone number is 571-272-2201. The examiner can normally be reached on Mon. - Thur. & every other Fri. (8:00am - 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached at 571-272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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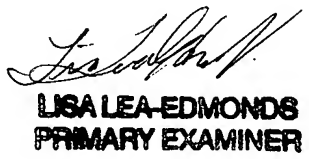

LISA LEA-EDMONDS
PRIMARY EXAMINER